FACT SHEET FOR NPDES PERMIT WA-000068-0

Alcoa Primary Metals – Wenatchee Works

SUMMARY

ALCOA, INC. produces primary aluminum metal by the Hall-Heroult reduction process.

The facility began operations at the Wenatchee Works primary aluminum smelter in 1952, with four pot lines; it added pot line #5 during the 1980s. In 2004 the smelter's operators retired Pot Line #4. The smelter now contains a combined total of 608 reduction cells, with existing plant production capacity of 188,257 metric tons per year. But in July 2001, ALCOA temporarily curtailed production (shut down 90% or more of its operations); Ecology modified the proposed NPDES Permit to require reduced - or no - effluent monitoring during curtailment. Currently, however, the smelter operates two pot lines (Line #1 and Line #5) and the previous NPDES permit requirements have full force and effect.

Alcoa's major water supply source - and its discharge receiving water - is the Columbia River. This facility uses cooling water from the Columbia River, but domestic water supplies come from on-site wells. The smelter's discharges to the River include its non-contact cooling water, boiler blowdown water, sanitary wastewater, and stormwater runoff.

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INTRODUCTION

The Federal Clean Water Act (FCWA, 1972, and later modifications, 1977, 1981, and 1987) established water quality goals for the navigable (surface) waters of the United States. One of the mechanisms for achieving the goals of the Clean Water Act is the National Pollutant Discharge Elimination System of permits (NPDES permits), which is administered by the Environmental Protection Agency (EPA). The EPA has authorized the State of Washington to administer the NPDES permit program. Chapter 90.48 RCW defines the Department of Ecology's authority and obligations in administering the wastewater discharge permit program.

The regulations adopted by the State include procedures for issuing permits (Chapter 173-220 WAC), water quality criteria for surface and ground waters (Chapters 173-201A and 200 WAC), and sediment management standards (Chapter 173-204 WAC). These regulations require that a permit be issued before discharge of wastewater to waters of the state is allowed. The regulations also establish the basis for effluent limitations and other requirements which are to be included in the permit. One of the requirements (WAC 173-220-060) for issuing a permit under the NPDES permit program is the preparation of a draft permit and an accompanying fact sheet. Public notice of the availability of the draft permit is required at least thirty days before the permit is issued (WAC 173-220-050). The fact sheet and draft permit are available for review (see Appendix A--Public Involvement of the fact sheet for more detail on the Public Notice procedures).

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in this review have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Comments and the resultant changes to the permit will be summarized in Appendix F--Response to Comments.

GENERAL INFORMATION	
Applicant	Alcoa, Inc.
Facility Name and Address	Wenatchee Works, 6200 Malaga/Alcoa Highway, Malaga, WA 98828-9784
Type of Facility:	Primary Aluminum Smelting
SIC Code	3334
Discharge Location	Columbia River, River Mile 445.2 Latitude: 47° 21' 22" N Longitude: 120° 07' 06" W.
Water Body ID Number	WA-CR-1040

BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

Alcoa, Inc. began operation of the Wenatchee Works primary aluminum smelter in 1952. The facility is located on the west side of the Columbia River just south of Wenatchee and near Malaga, Washington. At full production the facility employs approximately 700 people. Currently the facility employs 380 people. In July of 2001, the smelter was temporarily curtailed due in part to high electrical energy costs. Alcoa requested that several requirements in their NPDES permit be modified during periods of temporary curtailment of smelting operations. A public notice for the proposed permit changes was published on September 14, 2001. On November 1, 2001, Ecology modified Alcoa-Wenatchee's NPDES permit as follows: "During periods of temporary curtailment of smelting operations, the Permittee may petition the Department in writing to reduce or eliminate effluent monitoring and reduce the percent removal effluent limitation for the sanitary treatment facility. Curtailment is defined as the shut down of 90% or more of potline operations. Upon start up of the curtailed smelting operations, all NPDES requirements shall revert to those in the current permit."

INDUSTRIAL PROCESSING CAPACITY

The Wenatchee facility produces primary aluminum metal by the Hall-Heroult reduction process. The facility had five pot lines which contained a combined total of 774 center worked, pre-bake anode reduction cells. The smelter was capable of producing approximately 243,000 tons of aluminum metal per year, at full production. All metal produced is cast on-site into various sizes and forms: 700 pound pigs, 1500 pound pigs, 50 pound ingots and 70 pound ingots. The smelter retired Pot Line 4 in 2004. The remaining four pot lines at the smelter now contain a combined total of 608 reduction cells. Two potlines (Line 1 and Line 5) are currently operating; a restart of the other two lines will depend upon economic factors and power availability. At full four-line operation, the existing plant production capacity is 188,257 metric tons per year.

DISCHARGE OUTFALL

The discharge Outfall is located 1.8 miles upstream of the Rock Island Dam, on the west side of the Columbia River. The outfall line is 36 inches in diameter and extends 431 feet out into the Columbia River. The final 171 feet of the outfall line consist of a diffuser with ten (10) 9-inch ports, spaced nineteen (19) feet apart. The diffuser rests on the river bed at a depth of 36 feet below the surface of the water. The discharge from the facility is continuous. During the last two years of normal operation the discharge rate ranged from 1.7 to 4.3 million gallons per day (MGD). The permittee's major industrial process water supply source is from the Columbia River. Domestic water, supplied from on-site wells, typically makes up around one percent of the permittee's overall water usage. The average discharge from Outfall 001 ranges from 0.02 to 0.003 percent of the total flow of the Columbia River during typical Rock Island Dam discharge conditions (30,000 to 200,000 cfs). Sources of water discharged include non-contact cooling water, boiler blowdown water, domestic wastewater and storm water runoff. Major pollutants

include total suspended solids, aluminum and fluoride. Other pollutants monitored for are cyanide, benzo(a)pyrene, and oil and grease.

All sanitary wastewater is discharged, after treatment, to the industrial waste water pipe line. The total sanitary wastewater discharge flow is continuous and during the last two years of normal operation averaged 0.048 MGD. The permittee has planned no significant change in flows for the new permit term. Prior to discharge, this waste stream receives primary clarification followed by secondary treatment using an aerobic digester. During the previous permit term, Alcoa installed an ultraviolet (UV) system for disinfection of the sanitary effluent but continues to maintain the existing chlorination system for backup purposes.

PERMIT STATUS

The previous permit for this facility was issued on September 2, 1997. The previous permit placed effluent limitations on: Total Suspended Solids (TSS), Fluoride, Aluminum, Free Cyanide, Benzo(a)Pyrene (B(a)P), Oil and Grease, pH, Temperature, Biochemical Oxygen Demand (BOD), Chlorine, Fecal Coliform, and Toxicity. The limits were as follows:

Parameter	**Units**	**Effluent Limitations: Outfall # 001**		**Monitoring Frequency**	**Sample Type**
		Average Monthly	**Maximum Daily**		
Total Suspended Solids	lbs/day	100	500	Daily	24 hr comp
Fluoride	lbs/day	25	150	Daily	24 hr comp
Aluminum	lbs/day	15	46	Daily	24 hr comp
Free Cyanide	mg/l	--	--	Monthly	Grab
Benzo(a)Pyrene	lbs/day	--	--	Semi-annually	24 hr comp
Oil and Grease	lbs/day	50	250	Daily	Grab
Temperature	F	-	--	Continuous	Continuous
Flow	MGD	--	--	Continuous	Continuous
Production	tons/day	--	--	Daily Average	
pH		Daily Minimum 6.0	Daily Maximum 9.0	Continuous	Continuous

Parameter	Units	Effluent Limitations: Spray Irrigation Wildlife Area		Monitoring Frequency	Sample Type
		Average Monthly	Maximum Daily		
Copper	mg/l	1	3	Weekly	Grab
Aluminum	mg/l	--	--	Weekly	Grab
Fluoride	mg/l	--	--	Weekly	Grab
Flow	MGD	--	--	Continuous	Continuous
pH		Daily Minimum 6.5	Daily Maximum 8.5	Daily or Continuous	Grab or Continuous

Parameter	Units	Effluent Limitations: Sanitary Plant Discharge		Monitoring Frequency	Sample Type
		30-Day Average	7-Day Average		
Biochemical Oxygen Demand (5 day BOD)	mg/l lbs/day	25.0 19.0	45.0 34.0	Weekly	24 hr comp
Total Suspended Solids (TSS)	mg/l lbs/day	30.0 22.0	45.0 34.0	Weekly	24 hr comp
Fecal Coliform	# /100 mls	200	400	Weekly	Grab
Flow	MGD	--	--	Continuous	Continuous

AND

		Minimum	Maximum		
Chlorine	ppm	0.1	2.0	Daily	Grab
		Minimum	**Maximum**		
pH		6.0	9.0	Continuous	Continuous
UV light intensity and Number of Operating tubes	microwatts seconds/cm ^{2} and # of tubes	-- 9	-- --	Daily and Daily	Grab and Grab

Alcoa submitted an application for permit renewal on March 5, 2002 and the Department accepted it as complete on March 10, 2002.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The last non-sampling water inspection was conducted in June 2004. The last water inspection during which samples were collected was conducted on May 18-19, 2005. The facility was determined to be in compliance with the permit limits at the times of these inspections.

During the history of the previous permit, the Permittee remained in compliance according to Discharge Monitoring Reports (DMRs) Alcoa submitted to the Department and which Ecology verified by conducting inspections.

WASTEWATER CHARACTERIZATION

The proposed wastewater discharge is characterized for the following regulated parameters:

Table 1: Wastewater Characterization of Outfall #001 (from 1999 to 2000 data)

Parameter		Mass (lbs/day)	Limit (lbs/day)
TSS		9.4	100
Fluoride		5.4	25
Aluminum		0.9	15
Free Cyanide		<0.01	
B(a)P		0.0	
Oil & Grease		12.2	50
pH (units)	7.2 to 9.0		
Flow	3.1 MGD		

Table 2: Wastewater Characterization of STP Discharge (from 1999 to 2000 data)

Parameter	Concentration (mg/l)	Mass (lbs/day)
BOD	2.5	1.4
TSS	3.9	2.2
Fecal Coliform	<2.2 cfu/100mL	
Residual Chlorine	NA	
pH	7.3 to 7.6	
Flow	0.064 MGD	

SEPA COMPLIANCE

This application for permit renewal poses no SEPA compliance questions.

PROPOSED PERMIT LIMITATIONS

Federal and State regulations require that effluent limitations set forth in NPDES permit must be either technology- or water quality-based. Technology-based limitations are based upon the treatment methods available to treat specific pollutants. Technology-based limitations are set by regulation or developed on a case-by-case basis (40 CFR 125.3, and Chapter 173-220 WAC). Water quality-based limitations are based upon compliance with the Surface Water Quality Standards (Chapter 173-201A WAC), Ground Water Standards (Chapter 173-200 WAC), Sediment Quality Standards (Chapter 173-204 WAC) or the National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992). The more stringent of these two limits must be chosen for each of the parameters of concern. Each of these types of limits is described in more detail below.

The limits in this permit are based in part on information received in the application. The effluent constituents listed in the application were evaluated on a technology- and water quality-basis. The limits necessary to meet the rules and regulations of the State of Washington were determined and included in this permit. Ecology does not develop effluent limits for all pollutants that may be reported on the application as present in the effluent**.** Some pollutants are not treatable at the concentrations reported, are not controllable at the source, are not listed in regulation, and do not have a reasonable potential to cause a water quality violation**.** Effluent limits are not always developed for pollutants that may be in the discharge but not reported as present in the application. In those circumstances the permit does not authorize discharge of the non-reported pollutants. Effluent discharge conditions may change from the conditions reported in the permit application. If significant changes occur in any constituent, as described in 40 CFR 122.42(a), the Permittee is required to notify the Department of Ecology. The Permittee may be in violation of the permit until the permit is modified to reflect additional discharge of pollutants.

The existing permit has Ingot Casthouse Cooling Water Limitations, which were intended to apply if and when Alcoa used the discharge to spray irrigate in the wildlife area. Alcoa proposed the spray irrigation wildlife area project to Ecology in July 1995, Ecology accepted the proposal and addressed the required limits in the existing permit. After the existing permit was issued on September 2, 1997, Alcoa Wenatchee never implemented the spray irrigation project and have no plans to do so in the future. Therefore, Ecology is going to drop the existing limits requirement for spray irrigation. Instead, Ecology is going to require Alcoa to conduct sampling at the wastewater holding pond twice a year during the summer months (May to September) to demonstrate the discharge has no impacts to ground water. Metals required to be analyzed include: Iron, Aluminum, Silicon, Strontium, Copper, Potassium, Manganese, and Zinc.

DESIGN CRITERIA

Ecology has not established design criteria for Alcoa's wastewater treatment facility through a formal engineering review process. The facility has demonstrated the ability to comply with their limits, at full production, for many years. Because the facility is currently at half of its full production we have not included a requirement for an engineering analysis in this permit. When

the facility approaches full production in the future, Ecology will require the facility to prepare an engineering report evaluating the capacity of both the process wastewater facility and the sanitary wastewater facility in order to formally establish Ecology approved design criteria.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

Best Professional Judgment (BPJ) was used in establishing effluent limitations in this permit for toxic, nonconventional, and conventional pollutants. The applicant does not have any discharges from applicable subcategories in 40 CFR Part 421 Subpart B and therefore does not require any effluent limitations from this section. All of the applicant's waste water streams are non-scope flows.

The Department reviewed the applicant's Form R (Toxic Release Inventory Reporting Form) list of Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III hazardous substances and Form 2C of the NPDES Permit Application. The Department also reviewed the discharge monitoring reports (DMR), study results, and wastewater inspection results generated during the term of the previous permit.

The proposed daily maximum limits for total suspended solids (TSS), fluoride and aluminum remain unchanged from the previous permit. These permit limits were based on Alcoa's treatment facility performance. Alcoa's treatment facility achieves effluent concentrations below EPA Best Available Technology Economically Achievable (BAT) treatability levels. Alcoa continues to achieve these concentrations by using Best Management Practices (BMPs) for their non-contact cooling water, the boiler blowdown water and the storm water.

The effluent pH range limitation in the proposed permit will continue to be 6.0 to 9.0. This limitation is based on Best Practicable Control Technology (BPT) guidelines in 40 CFR Part 421.22. Operating within this range (6.0 to 9.0) will not result in water quality violations. The source of the Permittee's non-domestic water supply is the Columbia River, where the pH typically ranges from 7.9 to 8.2.

The permittee is required to continuously monitor pH from the Outfall 001 discharge. If the pH from this discharge drops below 7.0, the permittee is required to divert the total discharge to existing settling basins. This diversion will continue until the discharge pH rises above 7.0. The effect of this diversion will be to cease any discharge to the Columbia River.

Cyanide monitoring is required because of the presence of cyanide in wastes generated and stored on site. The oil and grease limits are mass based and remain unchanged from the previous permit.

Historically, Alcoa had benzo(a)pyrene (B(a)P) effluent limitations from the anode contact cooling water found in a subcategory in 40 CFR Part 421 Subpart B. Currently a small quantity of water is used to mist and cool the anode; however the water evaporates and is not discharged. The permit includes an effluent monitoring requirement for B(a)P on a relatively infrequent basis to verify its absence in the cooling water.

SURFACE WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's surface waters, WAC 173-201A-060 states that waste discharge permits shall be conditioned such that the discharge will meet established Surface Water Quality Standards. The Washington State Surface Water Quality Standards (Chapter 173-201A WAC) is a state regulation designed to protect the beneficial uses of the surface waters of the state. Surface water quality-based effluent limitations may be based on an individual waste load allocation (WLA) or on a WLA developed during a basin wide total maximum daily loading study (TMDL).

NUMERICAL CRITERIA FOR THE PROTECTION OF AQUATIC LIFE

"Numerical" water quality criteria are numerical values set forth in the State of Washington's Water Quality Standards for Surface Waters (Chapter 173-201A WAC). They specify the levels of pollutants allowed in receiving water while remaining protective of aquatic life. Numerical criteria set forth in the Water Quality Standards are used along with chemical and physical data for the wastewater and receiving water to derive the effluent limits in the discharge permit. When surface water quality-based limits are more stringent or potentially more stringent than technology-based limitations, they must be used in a permit.

NUMERICAL CRITERIA FOR THE PROTECTION OF HUMAN HEALTH

The U.S. EPA has promulgated 91 numeric water quality criteria for the protection of human health that are applicable to Washington State (EPA 1992). These criteria are designed to protect humans from cancer and other disease and are primarily applicable to fish and shellfish consumption and drinking water from surface waters.

NARRATIVE CRITERIA

In addition to numerical criteria, "narrative" water quality criteria (WAC 173-201A-030) limit toxic, radioactive, or deleterious material concentrations below those which have the potential to adversely affect characteristic water uses, cause acute or chronic toxicity to biota, impair aesthetic values, or adversely affect human health. Narrative criteria protect the specific beneficial uses of all fresh (WAC 173-201A-130) and marine (WAC 173-201A-140) waters in the State of Washington.

ANTIDEGRADATION

The State of Washington's Antidegradation Policy requires that discharges into receiving water shall not further degrade the existing water quality of the water body. In cases where the natural conditions of receiving water are of lower quality than the criteria assigned, the natural conditions shall constitute the water quality criteria. Similarly, when the natural conditions of receiving water are of higher quality than the criteria assigned, the natural conditions shall be protected. More information on the State Antidegradation Policy can be obtained by referring to WAC 173-201A-070.

The Department has reviewed existing records and is unable to determine if ambient water quality is either higher or lower than the designated classification criteria given in Chapter 173-

201A WAC; therefore, the Department will use the designated classification criteria for this water body in the proposed permit. The discharges authorized by this proposed permit should not cause a loss of beneficial uses.

CRITICAL CONDITIONS

Surface water quality-based limits are derived for the waterbody's critical condition, which represents the receiving water and waste discharge condition with the highest potential for adverse impact on the aquatic biota, human health, and existing or characteristic water body uses.

Mixing Zones

This permit authorizes an acute and a chronic mixing zone around the point of discharge as allowed by Chapter 173-201A WAC, *Water Quality Standards for Surface Waters of the State of Washington*. The Water Quality Standards stipulate some criteria be met before a mixing zone is allowed. The requirements and Ecology's actions are summarized as follows:

1. The allowable size and location be established in a permit.
This permit specifies the size and location of the allowed mixing zone.

2. Fully apply "all known available and reasonable methods of treatment" (AKART).
The technology-based limitations determined to be AKART are discussed in an earlier Section of this fact sheet (see Technology-based Limitations).

3. Consider critical discharge condition.
The critical discharge condition is often pollutant-specific or water body-specific and is discussed above.

4. Supporting information clearly indicates the mixing zone would not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with the existing or characteristic uses, result in damage to the ecosystem or adversely affect public health.
The Department of Ecology has reviewed the information on the characteristics of the discharge, receiving water characteristics and the discharge location. Based on this information, Ecology believes this discharge does not have a reasonable potential to cause the loss of sensitive or important habitat, substantially interfere with existing or characteristics uses, result in damage to the ecosystem or adversely affect public health.

5. Water quality criteria shall not be violated (exceeded) outside the boundary of a mixing zone.
A reasonable potential analysis, using procedures established by USEPA and the Department of Ecology, was conducted for each pollutant to assure there will be no violations of the water quality criteria outside the boundary of a mixing zone.

6. The size of the mixing zone and the concentrations of the pollutants shall be minimized.

The size of the mixing zone (in the form of the dilution factor) has been minimized by the use of design criteria with low probability of occurrence. For example, the reasonable potential analysis used the expected 95th percentile pollutant concentration, the 90th percentile background concentration, the centerline dilution factor and the lowest flow occurring once in every 10 years.

7. Maximum size of mixing zone
The authorized mixing zone does not exceed the maximum size restriction.

8. Acute Mixing Zone

A. Acute criteria met as near to the point of discharge as practicably attainable
The acute criteria have been determined to be met at 10% of the distance of the chronic mixing zone at the ten year low flow.

B. The concentration of, and duration and frequency of exposure to the discharge, will not create a barrier to migration or translocation of indigenous organisms to a degree that has the potential to cause damage to the ecosystem.
The toxicity of pollutants is dependent upon the exposure which in turn is dependent upon the concentration and the time the organism is exposed to that concentration. For example EPA gives the acute criteria for copper as "freshwater aquatic organisms and their uses should not be affected unacceptably if the 1- hour average concentration (in µg/l) does not exceed the numerical value given by $(0.960)(e^{(0.9422[\ln(\text{hardness})] - 1.464)})$ more than once every three years on the average." The limited acute mixing zone authorized for this discharge will assure that it will not create a barrier to migration. The effluent from this discharge will rise as it enters the receiving water assuring that it will not cause translocation of indigenous organism near the point of discharge.

C. Comply with size restrictions
The mixing zone authorized for this discharge meets the size restrictions of WAC 173-201A.

9. Overlap of Mixing Zones
This mixing zone does not overlap another mixing zone

The National Toxics Rule (EPA, 1992) allows the chronic mixing zone to be used to meet human health criteria.

CHRONIC MIXING ZONE DESCRIPTION

The length of the chronic mixing zone for Outfall 001 shall extend in any horizontal direction from the discharge ports for three hundred (300) feet plus the depth of the diffuser, which is thirty six (36) feet for a total of three hundred thirty six (336) feet.

The edge of the chronic mixing zone shall also be at least 100 feet from the shoreline at mean lower low water. The dilution ratio at the edge of this chronic zone has been calculated to be 284 to 1 (284:1).

ACUTE MIXING ZONE DESCRIPTION

The acute mixing zone for Outfall 001 is ten percent (10%) of the chronic zone as previously defined. This zone shall be thirty three and six tenths (33.6) feet in any spatial direction from any discharge port. The dilution ratio for the acute zone has been calculated to be 33 to 1 (33:1).

DESCRIPTION OF THE RECEIVING WATER

The facility discharges to the Columbia River which is designated as a Class **A** receiving water in the vicinity of the outfall. The discharge is located 1.8 miles upstream of the Rock Island Dam on the west side of the Columbia River. The outfall line is 36 inches in diameter and extends 431 feet out into the Columbia River. The final 171 feet of the outfall line consist of a diffuser with ten (10) 9-inch ports, spaced nineteen (19) feet apart. The diffuser rests on the river bed at an average depth of 36 feet below the surface of the water.

Characteristic uses include the following:

water supply (domestic, industrial, agricultural); stock watering; fish migration; fish rearing, spawning and harvesting; wildlife habitat; primary contact recreation; sport fishing; boating and aesthetic enjoyment; commerce and navigation. Water quality of this class shall markedly and uniformly exceed the requirements for all or substantially all uses.

SURFACE WATER QUALITY CRITERIA

Applicable criteria are defined in Chapter 173-201A WAC for aquatic biota. In addition, U.S. EPA has promulgated human health criteria for toxic pollutants (EPA 1992). Criteria for this discharge are summarized below:

Fecal Coliforms	100 organisms/100 mL maximum geometric mean
Dissolved Oxygen	8.0 mg/L minimum
Temperature	20 degrees Celsius maximum or incremental increases above background
pH	6.5 to 8.5 standard units
Turbidity	less than 5 NTU above background
Toxics	No toxics in toxic amounts (see Appendix C for numeric criteria for toxics of concern for this discharge)

CONSIDERATION OF SURFACE WATER QUALITY-BASED LIMITS FOR NUMERIC CRITERIA

Pollutant concentrations in the proposed discharge exceed water quality criteria with technology-based controls which the Department has determined to be AKART. A mixing zone is authorized in accordance with the geometric configuration, flow restriction, and other restrictions for mixing zones in Chapter 173-201A WAC and are defined as follows:

Ecology determined the dilution factors of effluent to receiving water that occur within these zones at the critical condition in an earlier permit term. During this permit renewal, Ecology reanalyzed the mixing zone using current operating conditions at Alcoa, updated Ecology

guidelines for defining critical conditions and the newer Plumes model. The dilution model input parameters (See **Appendix D**) include diffuser data, receiving water data, daily and monthly August discharges, etc. Ecology calculated dilution factors as follows:

	Acute	Chronic
Aquatic Life	33	284
Human Health, Carcinogen		284
Human Health, Non-carcinogen		284

Pollutants in an effluent may affect the aquatic environment near the point of discharge (near field) or at a considerable distance from the point of discharge (far field). Toxic pollutants, for example, are near-field pollutants--their adverse effects diminish rapidly with mixing in the receiving water. Conversely, a pollutant such as BOD is a far-field pollutant whose adverse effect occurs away from the discharge even after dilution has occurred. Thus, the method of calculating surface water quality-based effluent limits varies with the point at which the pollutant has its maximum effect.

The derivation of surface water quality-based limits also takes into account the variability of the pollutant concentrations in both the effluent and the receiving water.

The critical condition for the Columbia River is the seven day average low river flow with a recurrence interval of ten years (7Q10).

Parameter	Value used
7Q10 low flow	66,800 cfs
Velocity	0.4 ft/sec
Depth	67 feet
Width	1800 feet
Temperature	18.8 ^{o}C (15.6 ^{o}C to 20.6 ^{o}C)
pH	7.82
Dissolved Oxygen	8.96 mg/L
Fecal Coliform	? mL dry weather (>100/100 mL storm related)
Conductivity	0.134 mS/cm
Hardness	66 mg/L as CaCO3
Aluminum	28.7 ug/L
Mercury	0.00045 ug/L
Cadmium	0.07 ug/L
Lead	0.07 ug/L
Copper	0.74 ug/L
Zinc	1.63 ug/L

The impacts of dissolved oxygen deficiency, temperature, pH, fecal coliform, chlorine, ammonia, metals, and other toxics were determined as shown below, using the dilution factors at critical conditions described above.

BOD_5—BOD is not a pollutant of concern in the process wastewater discharge. There is a component of BOD in the treated sanitary wastewater discharge, which is limited by technology-based guidelines. The domestic component is a relatively minor percentage of the total flow. This combined discharge results in a very small amount of BOD loading relative to the large amount of dilution occurring in the receiving water at critical conditions. Technology-based limitations on the sanitary wastewater will be protective of dissolved oxygen criteria in the receiving water.

Temperature—Although we only have limited temperature data for the specific river segment into which Alcoa discharges a reasonable interpretation of the available data and current listings on the Columbia leads Ecology to conclude that the water quality in the receiving water at the discharge point could exceed the 20 ºC standard during the year. The limited data was obtained from Alcoa's NPDES Compliance Wastewater Discharge and Receiving Water Data Report (February 1999). The highest receiving water temperature recorded was 20.6ºC. The highest recorded temperature of the discharge in the last five years was 24.0 ºC.

The impact of the discharge on the temperature of the receiving water was modeled by simple mixing analysis at the maximum temperature conditions. The receiving water temperature at the maximum recorded condition is 20.6 ^oC and the maximum effluent temperature is 24 ^oC. The predicted resultant temperature at the boundary of the chronic mixing zone is 20.61 ^oC and the incremental rise is .01 ^oC. Under maximum temperature conditions the incremental rise is negligible and therefore no temperature limits were imposed on the discharge.

pH--The impact of pH was modeled using the calculations from EPA, 1988. The input variables were dilution factor 284, upstream maximum temperature 20.6^oC, upstream pH (average pH 7.9, minimum pH 6.4 and maximum pH of 9.0), upstream alkalinity 55(as mg $CaCO_3$/L), effluent temperature 21.5^oC (August average), effluent pH of 6 & effluent pH of 9, and effluent alkalinity 55 (as mg $CaCO_3$/L). Effluent alkalinity is not available however the Columbia River is used as source water and the alkalinity was assumed to be constant. Varying the effluent alkalinity in the model has negligible impact on the resultant pH.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters due to Alcoa's effluent. There is some historical Ecology ambient monitoring program data which shows a maximum pH value of 9.0. The model shows that the Alcoa Wenatchee effluent has little to no effect on the pH of the Columbia River. Therefore, the technology-based effluent limitations for temperature and pH were placed in the permit.

Turbidity--The impact of turbidity was evaluated based on the range of turbidity in the effluent and turbidity of the receiving water. Due to the large degree of dilution, it was determined that the turbidity criteria would not be violated outside the designated mixing zone.

Fecal coliform--The numbers of fecal coliform were modeled by simple mixing analysis using the technology-based limit of 400 organisms per 100 ml and a dilution factor of 284.

Under critical conditions there is no predicted violation of the Water Quality Standards for Surface Waters with the technology-based limit. Therefore, the technology-based effluent limitation for fecal coliform bacteria was placed in the proposed permit.

Toxic Pollutants--Federal regulations (40 CFR 122.44) require NPDES permits to contain effluent limits for toxic chemicals in an effluent whenever there is a reasonable potential for those chemicals to exceed the surface water quality criteria. This process occurs concurrently with the derivation of technology-based effluent limits. Facilities with technology-based effluent limits defined in regulation are not exempted from meeting the Water Quality Standards for Surface Waters or from having surface water quality-based effluent limits.

A reasonable potential analysis (See **Appendix E**) was conducted on the parameters of concern and/or those priority pollutants with water quality criteria to determine whether or not effluent limitations would be required in this permit.

The determination of the reasonable potential for the parameters of concern to exceed the water quality criteria was evaluated with procedures given in EPA, 1991 (**Appendix E**) at the critical condition. The critical condition in this case occurs in the summer months. The parameters used in the critical condition modeling are as follows: acute dilution factor 33, chronic dilution factor 284, receiving water temperature 24^{o}C, and receiving water alkalinity 55 (as mg $CaCO_3$/L).

Ambient background data was available for aluminum, cadmium, copper, mercury, lead and zinc. A determination of reasonable potential using background values or zero as appropriate resulted in no reasonable potential.

Water quality criteria for metals in Chapter 173-201A WAC are based on the dissolved fraction of the metal.

The Permittee may provide data clearly demonstrating the seasonal partitioning of the dissolved metal in the ambient water in relation to an effluent discharge. Metals criteria may be adjusted on a site-specific basis when data is available clearly demonstrating the seasonal partitioning in the ambient water in relation to an effluent discharge.

Metals criteria may also be adjusted using the water effects ratio approach established by USEPA, as generally guided by the procedures in USEPA Water Quality Standards Handbook, December 1983, as supplemented or replaced.

Calculations using all applicable data resulted in a determination that there is no reasonable potential for this discharge to cause a violation of water quality standards. This determination assumes that the Permittee meets the other effluent limits of this permit.

WHOLE EFFLUENT TOXICITY

The Water Quality Standards for Surface Waters require that the effluent not cause toxic effects in the receiving waters. Many toxic pollutants cannot be detected by commonly available detection methods. However, toxicity can be measured directly by exposing living organisms to the wastewater in laboratory tests and measuring the response of the organisms. Toxicity tests measure the aggregate toxicity of the whole effluent, and therefore this approach is called whole effluent toxicity (WET) testing. Some WET tests measure acute toxicity and other WET tests measure chronic toxicity.

Acute toxicity tests measure mortality as the significant response to the toxicity of the effluent. Dischargers who monitor their wastewater with acute toxicity tests are providing an indication of the potential lethal effect of the effluent to organisms in the receiving environment.

Chronic toxicity tests measure various sublethal toxic responses such as reduced growth or diminished reproduction. Chronic toxicity tests involve either a complete life cycle test of an organism with an extremely short life cycle or a partial life cycle test on a critical stage of one of a test organism's life cycles. Organism survival is also measured in some chronic toxicity tests.

Because the Permittee's effluent had not met the acute toxicity performance standard, an acute WET limit was placed in the current permit in accordance with WAC 173-205-050(2)(a)(i). During the current permit's term, Alcoa's discharge met the acute toxicity performance standard. Therefore the proposed permit does not include an acute limit as allowed by WAC 173-205-120(1). The Permittee is required to test effluent for acute toxicity during the last year of this permit term to verify that chronic toxicity in excess of the performance standard has not returned.

All chronic WET testing conducted during the current permit term has met the performance standard for chronic toxicity so no chronic WET limit or additional effluent characterization is needed. The Permittee is required to test effluent for chronic toxicity during the last year of this permit term to verify that chronic toxicity in excess of the performance standard has not returned.

If the Permittee makes process or material changes which, in the Department's opinion, results in an increased potential for acute or chronic effluent toxicity, then the Department may require additional effluent characterization in a regulatory order, by permit modification, or in the permit renewal. Toxicity is assumed to have increased if WET testing conducted for submission with a permit application fails to meet the performance standards in WAC 173-205-020, "whole effluent toxicity performance standard". The Permittee may demonstrate to the Department that changes have not increased effluent toxicity by performing additional WET testing after the time the process or material changes have been made.

HUMAN HEALTH

Washington's water quality standards now include 91 numeric health-based criteria that must be considered in NPDES permits. These criteria were promulgated for the state by the U.S. EPA in its National Toxics Rule (Federal Register, Volume 57, No. 246, Tuesday, December 22, 1992).

A determination of the discharge's potential to cause an exceedance of the water quality standards was conducted as required by 40 CFR 122.44(d). The reasonable potential determination was evaluated with procedures given in the Technical Support Document for Water Quality-Based Toxics Control (EPA/505/2-90-001) and the Department's Permit Writer's Manual (Ecology Publication 92-109, July, 1994). The determination indicated that the discharge has no reasonable potential to cause a violation of water quality standards, thus an effluent limit is not warranted.

SEDIMENT QUALITY

The Department has promulgated aquatic sediment standards (Chapter 173-204 WAC) to protect aquatic biota and human health. These standards state that the Department may require

Permittees to evaluate the potential for the discharge to cause a violation of applicable standards (WAC 173-204-400).

Alcoa conducted a sediment study in May of 1993. The study showed that toxicity in the downstream sediments was not statistically different from the upstream sediments. The Department has determined through a review of the discharger characteristics, effluent characteristics and the 1993 sediment study that this discharge has no reasonable potential to violate the Sediment Management Standards.

GROUND WATER QUALITY LIMITATIONS

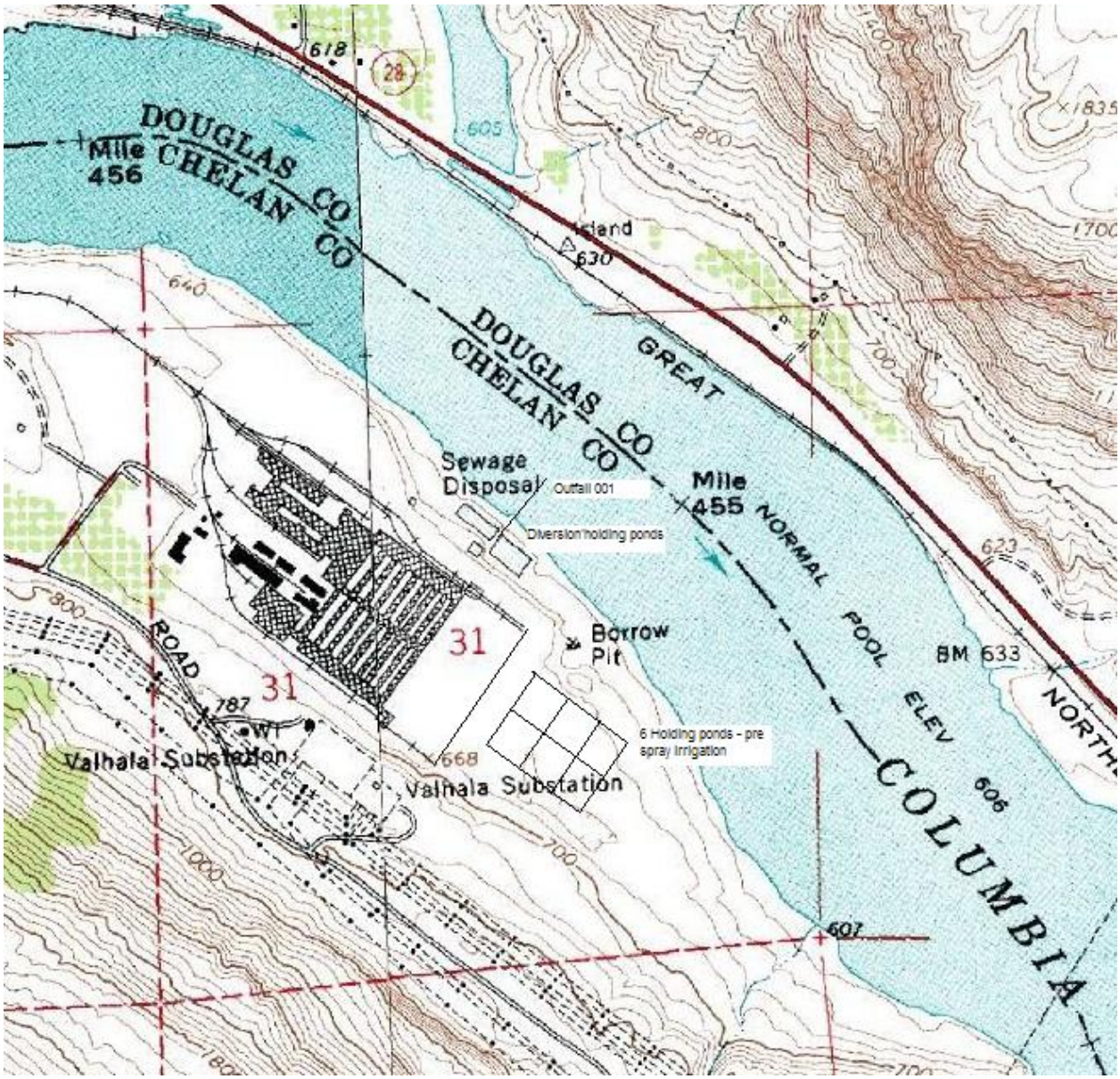
The Department has promulgated Ground Water Quality Standards (Chapter 173-200 WAC) to protect beneficial uses of ground water. Permits issued by the Department shall be conditioned in such a manner so as not to allow violations of those standards (WAC 173-200-100).

Alcoa has four unlined diversion ponds that could potentially discharge to groundwater. As can be seen from the map below, these ponds are located adjacent to the Columbia River. If a discharge to ground water from these ponds is occurring, it discharges almost directly into the River, where the final effluent is currently discharged via an outfall. The discharge consists of non-contact cooling water, stormwater, boiler blowdown and treated sanitary wastewater.

Concentrations of most detectable pollutants in Alcoa's effluent were found to be less than the groundwater quality criteria. Only arsenic and pH parameters exceeded the criteria. This comparison is included in **Appendix E**. The maximum concentration of arsenic measured in the Alcoa effluent was 0.8µg/l while the groundwater standard is 0.05µg/l. The effluent pH ranges from 6.9-8 to 10.2 while the groundwater standard range is 6.5 to 8.5.

Incidental leakage of effluent of this quality, and in this location, should have undetectable or minimal impacts to ground water quality. The volume of groundwater, which would potentially be impacted, would be very small; and impacts would occur just prior to its entering the Columbia River (the current discharge location). Therefore no limitations or actions are required based on potential effects to ground water.

Currently Alcoa discharges ingot lagoon non contact cooling water in a wildlife area adjacent to the 6 holding ponds shown in the figure below. The wastewater is generally stored in one of the holding ponds where generally it evaporates and infiltrates. The concentration of metals in the cooling water discharge was determined to be below groundwater criteria. Alcoa will measure metals in the holding pond on an ongoing basis to ensure that concentrations continue to meet groundwater standards.



COMPARISON OF EFFLUENT LIMITS WITH THE EXISTING PERMIT ISSUED ON SEPTEMBER 2, 1997.

Outfall #001	Existing Limits	Proposed Limits
TSS, AML	100 lbs/day	100 lbs/day
TSS, MDL	500 lbs/day	500 lbs/day
Fluoride , AML	25 lbs/day	25 lbs/day
Fluoride, MDL	150 lbs/day	150 lbs/day
Aluminum, AML	15 lbs/day	15 lbs/day

Outfall #001	Existing Limits	Proposed Limits
Aluminum, MDL	46 lbs/day	46 lbs/day
Free Cyanide, AML & MDL	PP scan	PP scan
Benzo(a)Pyrene, AML & MDL	PP scan	PP scan
Oil & Grease, AML	50 lbs/day	50 lbs/day
Oil & Grease, MDL	250 lbs/day	250 lbs/day
pH	6.0 to 9.0	6.0 to 9.0

Sanitary Plant Discharge	Existing Limits	Proposed Limits
BOD, 30-day Average	25 mg/l & 19.0 lbs/day	25 mg/l & 19.0 lbs/day
BOD, 7-day Average	45 mg/l & 34.0 lbs/day	45 mg/l & 34.0 lbs/day
TSS, 30-day Average	30 mg/l & 22 lbs/day	30 mg/l & 22 lbs/day
TSS, 7-day Average	45 mg/l & 34 lbs/day	45 mg/l & 34 lbs/day
Fecal Coliform, 30-day Average	200 #/100 mls	200 #/100 mls
Fecal Coliform, 7-day Average	400 #/100 mls	400 #/100 mls
Chlorine	0.1 to 2.0 ppm	0.1 to 2.0 ppm
UV Light Intensity	--	--
Number of Operating UV tubes	9	9
pH	6.0 to 9.0	6.0 to 9.0

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are required (WAC 173-220-210 and 40 CFR 122.41) to verify that the treatment process is functioning correctly and the effluent limitations are being achieved.

The monitoring schedule is detailed in the proposed permit under Condition S.2. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

PERFORMANCE BASED REDUCTION OF MONITORING FREQUENCIES

EPA published guidance in April of 1996 entitled, “Interim Guidance for Performance-Based Reduction of NPDES Permit Monitoring Frequencies”. The guidance recommends looking at and comparing long term average values to permit limits. In addition to using the approach recommended in the guidance, Ecology also compared maximum values with permit limits.

For the parameters evaluated, Alcoa Wenatchee's monitoring history demonstrates their ability to consistently meet the regulatory limits and to maintain their treatment system operation. The proposed monitoring frequencies rely on the guidance recommendations and Ecology's best professional judgment. Alcoa Wenatchee will be expected to maintain the performance levels to continue to receive the reduced monitoring. If the performance levels of the facility deteriorate, monitoring frequencies will revert to the frequencies in the existing permit.

LAB ACCREDITATION

With the exception of certain parameters the permit requires all monitoring data to be prepared by a laboratory registered or accredited under the provisions of Chapter 173-50 WAC, *Accreditation of Environmental Laboratories.* The laboratory at this facility is accredited for:

Biochemical Oxygen Demand BOD SM 5210
Chlorine, Total Residual SM 4500-Cl G
Cyanide, Total SM 4500-CN C+E
Cyanide
Dissolved Oxygen SM 4500-O G
Fluoride (Automated Complexone) SM 4500-F E
Oil & Grease EPA Method 1664
pH SM 4500-H
Solids, Total Suspended SM 2540 D
Turbidity SM 2130 B
Aluminum SM 3111 D / 3113
Fecal Coliforms SM 9221 E Mod
Specific Conductance SM 2510

OTHER PERMIT CONDITIONS

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 173-220-210).

NON-ROUTINE AND UNANTICIPATED DISCHARGES

Occasionally, this facility may generate wastewater which is not characterized in their permit application because it is not a routine discharge and was not anticipated at the time of application. These typically are waters used to pressure test storage tanks or fire water systems or leaks from drinking water systems. These are typically clean waste waters but may be contaminated with pollutants. The permit contains an authorization for non-routine and unanticipated discharges. The permit requires a characterization of these waste waters for

pollutants and examination of the opportunities for reuse. Depending on the nature and extent of pollutants in this wastewater and opportunities for reuse, Ecology may authorize a direct discharge via the process wastewater outfall or through a stormwater outfall for clean water, require the wastewater to be placed through the facilities wastewater treatment process or require the water to be reused.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

SOLID WASTE PLAN

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state. The plan must be submitted to the local permitting agency for approval, if necessary, and to the Department.

OUTFALL EVALUATION

Proposed permit condition S. 9 requires the Permittee to conduct an outfall inspection and submit a report detailing the findings of that inspection. The purpose of the inspection is to determine the condition of the discharge pipe and diffusers and to evaluate the extent of sediment accumulations in the vicinity of the outfall.

TREATMENT SYSTEM OPERATING PLAN

In accordance with state and federal regulations, the Permittee is required to take all reasonable steps to properly operate and maintain the treatment system (40 CFR 122.41(e)) and WAC 173-220-150 (1)(g). An operation and maintenance manual update will be submitted as required by state regulation for the construction of wastewater treatment facilities (WAC 173-240-150). It has been determined that the implementation of the procedures in the Treatment System Operating Plan is a reasonable measure to ensure compliance with the terms and limitations in the permit.

GENERAL CONDITIONS

General Conditions are based directly on state and federal law and regulations and have been standardized for all individual industrial NPDES permits issued by the Department.

PERMIT ISSUANCE PROCEDURES

PERMIT MODIFICATIONS

The Department may modify this permit to impose numerical limitations, if necessary to meet Water Quality Standards for Surface Waters, Sediment Quality Standards, or Water Quality Standards for Ground Waters, based on new information obtained from sources such as inspections, effluent monitoring, outfall studies, and effluent mixing studies.

The Department may also modify this permit as a result of new or amended state or federal regulations.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, protect human health, aquatic life, and the beneficial uses of waters of the State of Washington. The Department proposes that this proposed permit be issued for 5 years.

REFERENCES FOR TEXT AND APPENDICES

Environmental Protection Agency (EPA)

1992. National Toxics Rule. Federal Register, V. 57, No. 246, Tuesday, December 22, 1992.

1991. Technical Support Document for Water Quality-based Toxics Control. EPA/505/2-90-001.

1988. Technical Guidance on Supplementary Stream Design Conditions for Steady State Modeling. USEPA Office of Water, Washington, D.C.

1985. Water Quality Assessment: A Screening Procedure for Toxic and Conventional Pollutants in Surface and Ground Water. EPA/600/6-85/002a.

1983. Water Quality Standards Handbook. USEPA Office of Water, Washington, D.C.

Tsivoglou, E.C., and J.R. Wallace.

1972. Characterization of Stream Reaeration Capacity. EPA-R3-72-012. (Cited in EPA 1985 op.cit.)

Washington State Department of Ecology.

1994. Permit Writer's Manual. Publication Number 92-109

Washington State Department of Ecology.

Laws and Regulations(http://www.ecy.wa.gov/laws-rules/index.html)

Permit and Wastewater Related Information (http://www.ecy.wa.gov/programs/wq/wastewater/index.html

Wright, R.M., and A.J. McDonnell.

1979. In-stream Deoxygenation Rate Prediction. Journal Environmental Engineering Division, ASCE. 105(EE2). (Cited in EPA 1985 op.cit.)

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department proposes to issue a permit renewal to Alcoa Inc. – Wenatchee Works. The NPDES permit conditions limit the kinds, amounts, and concentrations of pollutants the facility may discharge to the Columbia. It requires the Permittee to measure, test, and report its discharge pollution control performance. The permit also prescribes "best management practices" for the smelter's operations and physical plant, and defines pollution control standards that apply during the five-year permit term.

The NPDES permit tells what Alcoa's operators must do to protect the Columbia River from adverse impacts of its wastewater discharges. The Fact Sheet describes physical conditions in and around the smelter's wastewater system. It explains both why the permit imposes the Special Conditions upon Alcoa (federal and state rules, scientific reasoning, and technological standards) and how the Permittee must fulfill them (published methodologies).

Public notice of proposal was published on January 17, 2006, in *the Wenatchee World* to inform the public that Ecology drafted an NPDES permit renewal and placed a copy in the local library, and posted the document on the Industrial Section web page, inviting public examination and comment on it. The Public Notice was also distributed by electronic and postal mail to persons expressing interest in the NPDES Permit. The Public Comment Period will also be posted on Ecology's internet public events calendar, beginning January 17.

Interested persons are invited to submit written comments about the adequacy of the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at Ecology's headquarters building in Lacey, at 300 Desmond Drive, off Martin Way.

Written comments should be mailed to:

Bob King
Department of Ecology
Industrial Section
P.O. Box 47706
Olympia, WA 98504-7600

Any interested party may comment on the draft permit or request a public hearing of comments about it. Upon a show of significant public interest in the draft permit, Ecology will convene a public hearing (WAC 173-220-090). Public notice regarding such hearing will be circulated at least thirty (30) days in advance.

Comments about the permit should reference specific text, followed by a proposed modification. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft, in forming a final permit. Ecology's response to any substantive comment will be available to anyone expressing an interest, at the time Ecology issues this permit.

This permit and fact sheet were written by Bob King**.**

APPENDIX B--GLOSSARY

Acute Toxicity--The lethal effect of a compound on an organism that occurs in a short period of time, usually 48 to 96 hours.

AKART-- An acronym for "all known, available, and reasonable methods of treatment".

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation --The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of a treatment facility.

Chlorine--Chlorine is used to disinfect wastewaters of pathogens harmful to human health. It is also extremely toxic to aquatic life.

Chronic Toxicity--The effect of a compound on an organism over a relatively long time, often 1/10 of an organism's lifespan or more. Chronic toxicity can measure survival, reproduction or growth rates, or other parameters to measure the toxic effects of a compound or combination of compounds.

Clean Water Act (CWA)--The Federal Water Pollution Control Act enacted by Public Law 92-500, as amended by Public Laws 95-217, 95-576, 96-483, 97-117; USC 1251 et seq.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Critical Condition--The time during which the combination of receiving water and waste discharge conditions have the highest potential for causing toxicity in the receiving water environment. This situation usually occurs when the flow within a water body is low, thus, its ability to dilute effluent is reduced.

Dilution Factor--A measure of the amount of mixing of effluent and receiving water that occurs at the boundary of the mixing zone. Expressed as the inverse of the percent effluent fraction e.g., a dilution factor of 10 means the effluent comprises 10% by volume and the receiving water 90%.

Engineering Report--A document which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Fecal Coliform Bacteria--Fecal coliform bacteria are used as indicators of pathogenic bacteria in the effluent that are harmful to humans. Pathogenic bacteria in wastewater discharges are controlled by disinfecting the wastewater. The presence of high numbers of fecal coliform bacteria in a water body can indicate the recent release of untreated wastewater and/or the presence of animal feces.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Major Facility--A facility discharging to surface water with an EPA rating score of > 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

Minor Facility--A facility discharging to surface water with an EPA rating score of < 80 points based on such factors as flow volume, toxic pollutant potential, and public health impact.

Mixing Zone--An area that surrounds an effluent discharge within which water quality criteria may be exceeded. The area of the authorized mixing zone is specified in a facility's permit and follows procedures outlined in state regulations (Chapter 173-201A WAC).

National Pollutant Discharge Elimination System (NPDES)--The NPDES (Section 402 of the Clean Water Act) is the Federal wastewater permitting system for discharges to navigable waters of the United States. Many states, including the State of Washington, have been delegated the authority to issue these permits. NPDES permits issued by Washington State permit writers are joint NPDES/State permits issued under both State and Federal laws.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantitation Level (QL)-- A calculated value five times the MDL (method detection level).

Responsible Corporate Officer-- A president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation, or the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditures exceeding $25 million (in second quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures (40 CFR 122.22).

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Upset--An exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, lack of preventative maintenance, or careless or improper operation.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent the concentration of that parameter from exceeding its water quality criterion after it is discharged into a receiving water.

APPENDIX C--TECHNICAL CALCULATIONS

Several of the Excel® spreadsheet tools used to evaluate a discharger's ability to meet Washington State water quality standards can be found on the Department's homepage at http://www.ecy.wa.gov.

APPENDIX D—MIXING ZONE ANALYSIS

APPENDIX E—REASONABLE PTTENTIAL TO EXCEED ANALYSIS

APPENDIX F—RESPONSE TO COMMENTS